

**Surface and Intermediate Water hydrography, planktonic and  
benthic biota in the Caribbean Sea – Climate, Bio and  
Geosphere linkages (OPOKA)**

Cruise No. 78, Leg 1

February 22 – March 28, 2009,  
Colón (Panama) – Port of Spain (Trinidad and Tobago)

**- Supplementary Material -**

**Part 2**

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Leitstelle Deutsche Forschungsschiffe  
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## 5.5.2 Appendix items: Surface sampling protocols

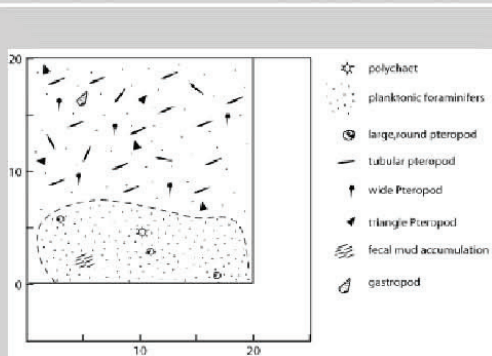
## Reineck box core

M78/1-164-8

Latitude	Longitude	Depth [m]	Date	Time
18°30.483'	-83°37.866'	1193.0	27.02.2009	03:00:00



Sediment surface



Schematic sketch of the surface



Sediment succession

**Sediment surface**

<b>Sediment</b>	Pteropod hash covering foraminiferal ooze
<b>Colour</b>	Pale brown, 10YR 7/3
<b>Structure</b>	-
<b>Constituents</b>	Polychaets, large round pteropods, tubular pteropods, wide pteropods, triangle pteropods, foraminifers, gastropods
<b>Living organisms</b>	
<b>Morphology</b>	Flat

**Sediment succession**

<b>Sediment</b>	12 cm homogeneous foraminiferal ooze
<b>Colour</b>	Pale brown, 10YR 7/3
<b>Structure</b>	-
<b>Constituents</b>	Foraminifers
<b>Bioturbation</b>	Nearly not visible, only small fecal pellet pile
<b>Subsamples</b>	Schönfeld Beer Nürnberg Titschack
<b>Operator</b>	Schönfeld, Titschack

# Reineck box core

M78/1-164-8

Latitude	Longitude	Depth [m]	Date	Time
18°30.483'	-83°37.866'	1193.0	27.02.2009	03:00:00



Grain size fraction &gt; 2 mm



Solitary coral



Grain size fraction &gt; 1mm



Grain size fraction &gt;500 μm

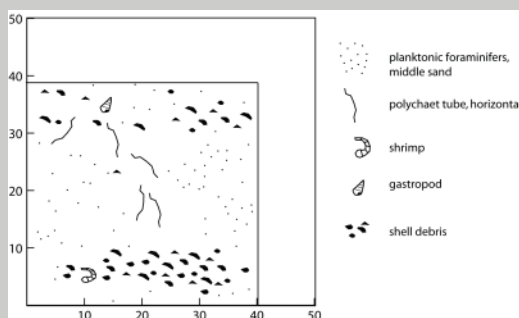
# Van Veen grab

M78/1-168-1

Latitude	Longitude	Depth [m]	Date	Time
21°41.29'	-86°37.31'	34	28.02.2009	19:49:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Medium carbonate sand with little coarse sand and silt
<b>Colour</b>	Very pale brown; 10YR8/2
<b>Structure</b>	
<b>Constituents</b>	Polychaet tubes, shrimp; gastropod; small red gastropods
<b>Living organisms</b>	
<b>Morphology</b>	Flat

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Titschack
	Nürnberg
	Dullo
<b>Operator</b>	Schönfeld

# Van Veen grab

M78/1-168-1

Latitude	Longitude	Depth [m]	Date	Time
21°41.29'	-86°37.31'	34	28.02.2009	19:49:00



Grain size fraction &gt; 2 mm



Free living bryozoan colony



Grain size fraction &gt; 1 mm

Grain size fraction > 500  $\mu\text{m}$

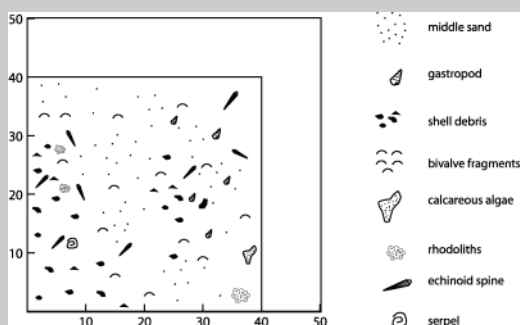
# Van Veen grab

M78/1-169-1

Latitude	Longitude	Depth [m]	Date	Time
21°41.610'	-86°32.760'	41.8	28.02.2009	20:51:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Coarse carbonate sand rich in biotritus
<b>Colour</b>	Pale yellow, 2,5Y8/2
<b>Structure</b>	
<b>Constituents</b>	Several gastropods, bivalves, serpulids, echinoids (dominantly fragments < 1 cm), rhodoliths (ca. 2 cm in diameter)
<b>Living organisms</b>	Rhodoliths
<b>Morphology</b>	Irregular topography with small depressions and elevations

## Sediment succession

<b>Sediment</b>	Sediment is rich in centimeter-sized rhodoliths, which were partly still alive when sampled (red colour)
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Nürnberg
	Beer
	Titschack
	Dullo
<b>Operator</b>	Schönfeld

# Van Veen grab

## M78/1-169-1

Latitude	Longitude	Depth [m]	Date	Time
21°41.610'	-86°32.760'	41.8	28.02.2009	20:51:00



Grain size fraction > 2 mm



Grain size fraction > 500 µm



Partly living rhodolith



Regular echinoid



Grain size fraction > 1 mm



Red-algal branch

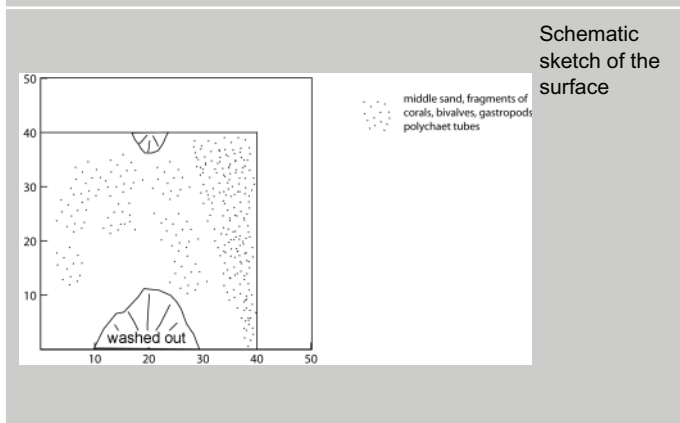
# Van Veen grab

M78/1-170-1

Latitude	Longitude	Depth [m]	Date	Time
21°42.543'	-86°27.894'	127.5	28.02.2009	21:43:00



Surface sediment



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Coarse carbonate sand with a high content of fine carbonate sand
<b>Colour</b>	Pale yellow, 5Y8/2
<b>Structure</b>	None
<b>Constituents</b>	Polychaet tubes, small bivalves, gastropod fragments, shell, coral fragments
<b>Living organisms</b>	
<b>Morphology</b>	

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Nürnberg
	Beer
	Dullo
	Titschack
<b>Operator</b>	Schönfeld



# Van Veen grab

M78/1-170-1

Latitude	Longitude	Depth [m]	Date	Time
21°42.543'	-86°27.894'	127.5	28.02.2009	21:43:00



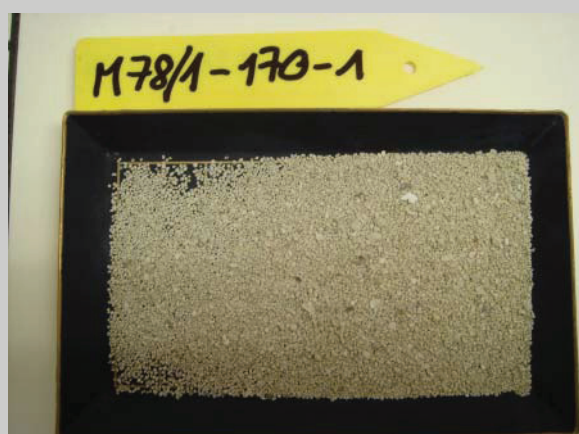
Grain size fraction &gt; 2mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Grain size fraction &gt; 500 µm

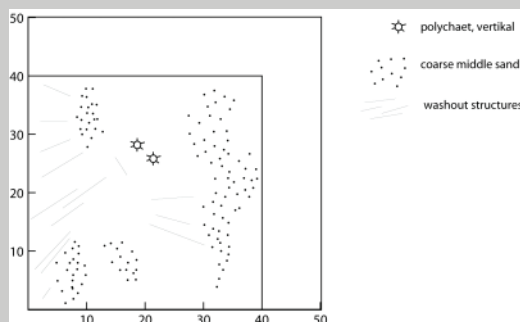
# Van Veen grab

M78/1-171-4

Latitude	Longitude	Depth [m]	Date	Time
21°42.678'	-86°26.979'	163.7	28.02.2009	23:11:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Middle sand (carbonate) with a biogene carbonate coarse sand fraction
<b>Colour</b>	Pale olive, 5Y6/3
<b>Structure</b>	Slightly washed out, patches of carbonatic coarse sand
<b>Constituents</b>	Some polychaets
<b>Living organisms</b>	
<b>Morphology</b>	Slightly irregular

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Nürnberg
	Beer
	Dullo
	Titschack
<b>Operator</b>	Schönfeld

# Van Veen grab

M78/1-171-4

Latitude	Longitude	Depth [m]	Date	Time
21°42.678'	-86°26.979'	163.7	28.02.2009	23:11:00



Grain size fraction &gt; 2 mm



Grain size fraction &gt; 1 mm



Grain size fraction &gt; 500 µm

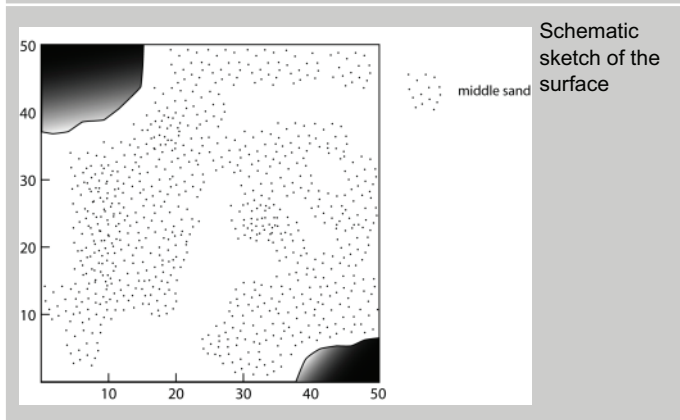
# Box core

M78/1-172-1

Latitude	Longitude	Depth [m]	Date	Time
21°42.75'	-86°26.48'	184	28.02.2009	23:52:00



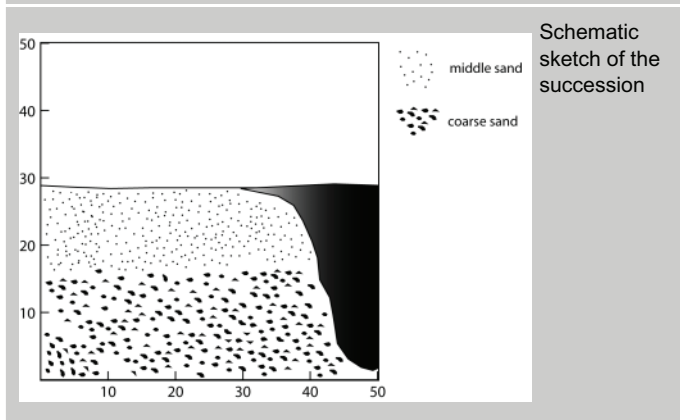
Sediment surface



Schematic sketch of the surface



Succession



Schematic sketch of the succession

## Sediment surface

**Sediment** Fine to medium sand

**Colour** Olive, 5Y5/4

**Structure** Washed out at the upper left corner and at the bottom right corner

**Constituents** -

**Living organisms** -

**Morphology** Slightly irregular

## Sediment succession

**Sediment** Sediment succession is subdivided into an upper 13 cm thick fine sand horizon and a lower 14 cm thick coarse sand horizon

**Colour** Olive, 5Y5/4

**Structure**

**Constituents** -

**Bioturbation** Some burrows are visible at the sediment surface

**Subsamples** Titschack

Troccoli

**Operator** Schönfeld

## Box core

M78/1-172-1

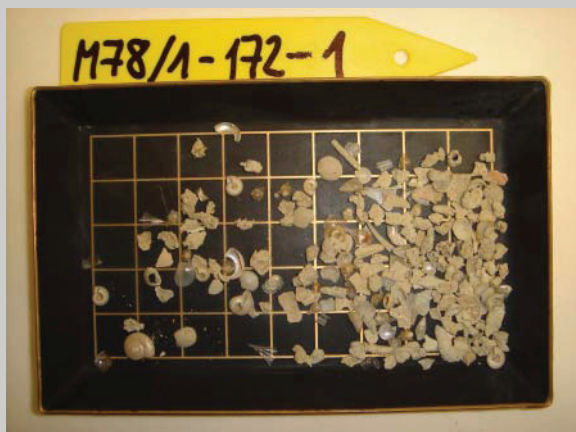
Latitude	Longitude	Depth [m]	Date	Time
21°42.75'	-86°26.48'	184	28.02.2009	23:52:00



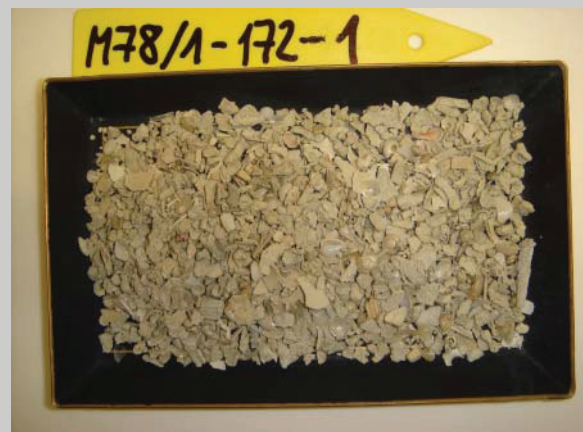
Upper horizon, grain size fraction &gt; 2 mm



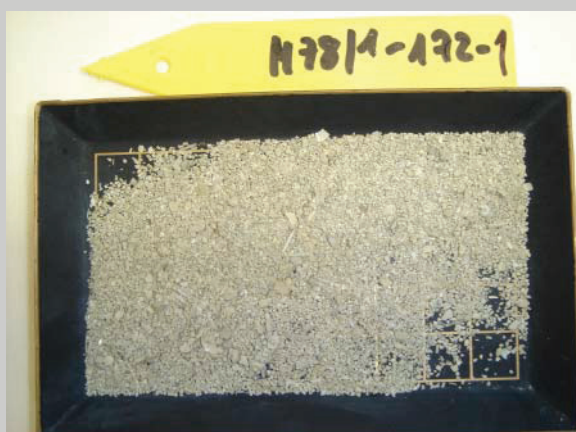
Lower horizon, grain size fraction &gt; 2 mm



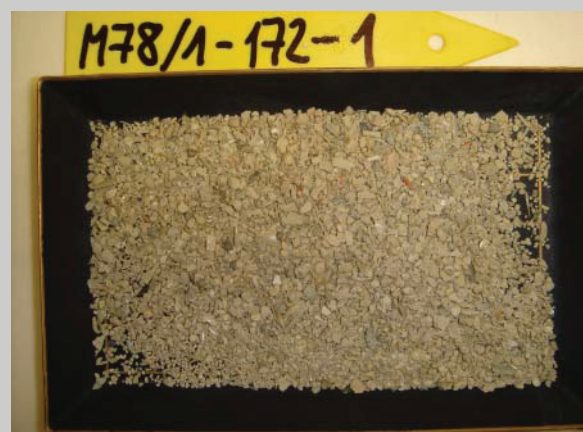
Upper horizon, grain size fraction &gt; 1 mm



Lower horizon, grain size fraction &gt; 1 mm



Upper horizon, grain size fraction &gt; 500 µm



Lower horizon, grain size fraction &gt; 500 µm

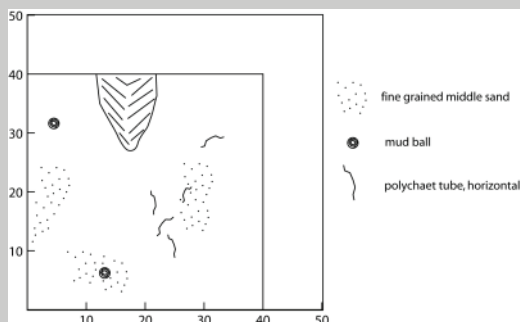
# Van Veen grab

M78/1-172-2

Latitude	Longitude	Depth [m]	Date	Time
21°42.740'	-86°26.483'	180.6	01.03.2009	00:18:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Middle sand with fine sand fraction (only surface samples were taken)
<b>Colour</b>	Olive, 5Y5/4
<b>Structure</b>	Homogeneous
<b>Constituents</b>	Polychaets, foraminifers, coral debris, shell, pteropod fragments, mud pellets
<b>Living organisms</b>	
<b>Morphology</b>	Flat to slightly irregular

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Nürnberg
	Beer
	Dullo
	Titschack
<b>Operator</b>	Schönfeld

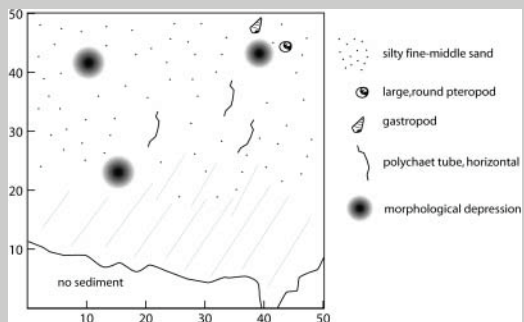
# Box core

M78/1-173-1

Latitude	Longitude	Depth [m]	Date	Time
21°43.652'	-86°21.707'	382.2	01.03.2009	01:55:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Silty fine sand to middle sand
<b>Colour</b>	Light olive grey, 5Y6/2
<b>Structure</b>	Slightly irregular (with slight depressions)
<b>Constituents</b>	Polychaets, pteropods, foraminifers, echinoid spines, sponge spicules
<b>Living organisms</b>	
<b>Morphology</b>	Flat

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Nürnberg
	Beer
	Dullo
	Titschack
<b>Operator</b>	Schönfeld

# Box core

M78/1-173-1

Latitude	Longitude	Depth [m]	Date	Time
21°43.652'	-86°21.707'	382.2	01.03.2009	01:55:00



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Grain size fraction &gt; 500 µm



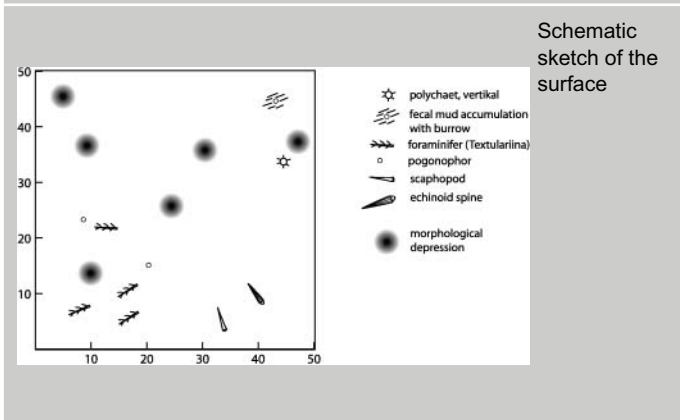
# Box core

M78/1-174-1

Latitude	Longitude	Depth [m]	Date	Time
21°43.244'	-86°16.612'	736.7	01.03.2009	03:18:00



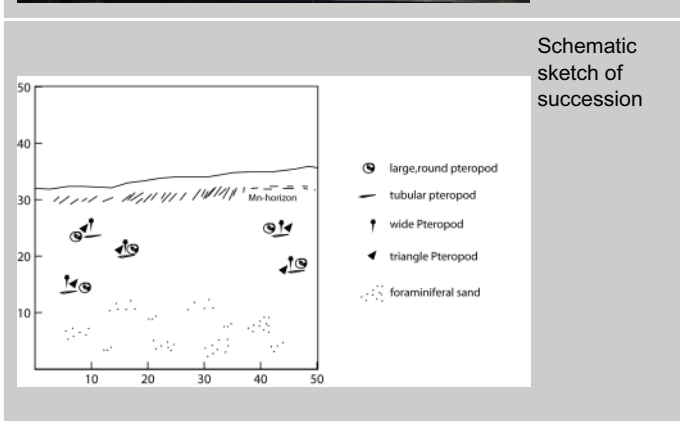
Sediment surface



Schematic sketch of the surface



Succession



Schematic sketch of succession

## Sediment surface

<b>Sediment</b>	Bioturbated silty clay
<b>Colour</b>	Pale yellow, 2.5Y7/3
<b>Structure</b>	5 to 10 cm topography with depressions and elevations, which originated from bioturbation
<b>Constituents</b>	Foraminifers (textulariids), scaphopods, polychaets, pogonophore polychaets, fecal pellet accumulations, partly with central burrow
<b>Living organisms</b>	
<b>Morphology</b>	Irregular with bioturbation

## Sediment succession

<b>Sediment</b>	0 to 3(5) cm: slightly sandy pale yellow clay; 3 to 4 cm: dark brown patchy Mn-oxides; 4 to 18 cm: slightly fine sandy clay (soft); 18 to 32 cm: same as above, but with burrows filled with sediment enriched with foraminifers and pteropods
<b>Colour</b>	0 to 3 cm: pale yellow, 2.5Y7/3 4 to 32 cm: light green grey, 7/10y
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld Nürnberg Beer Dullo Troccoli Titschack
<b>Operator</b>	Schönfeld

## Box core

M78/1-174-1

Latitude	Longitude	Depth [m]	Date	Time
21°43.244'	-86°16.612'	736.7	01.03.2009	03:18:00



Upper part, grain size fraction &gt; 2 mm



Lower part, grain size fraction &gt; 2 mm



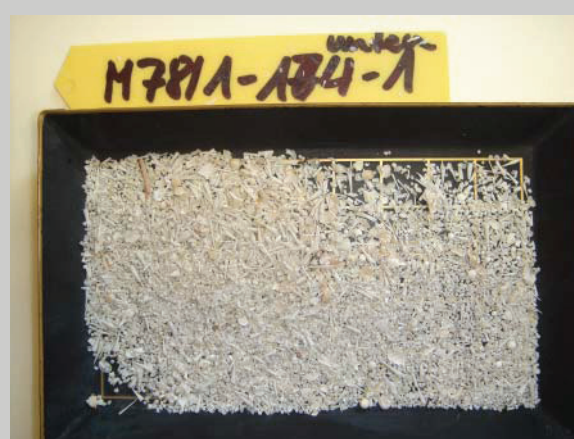
Upper part, grain size fraction &gt; 1 mm



Lower part, grain size fraction &gt; 1 mm



Upper part, grain size fraction &gt; 500 μm

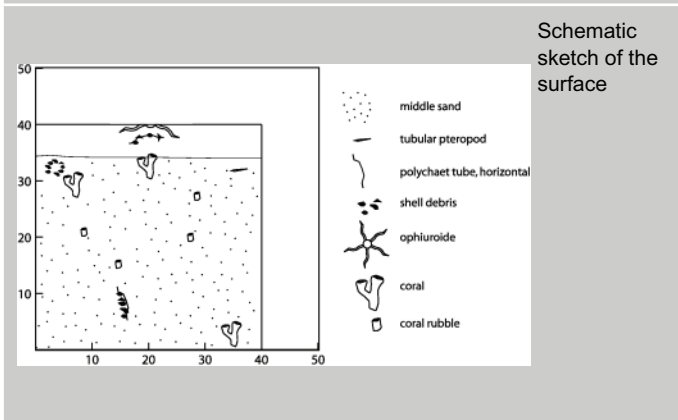


Lower part, grain size fraction &gt; 500 μm

# Reineck box core

M78/1-192-2

Latitude	Longitude	Depth [m]	Date	Time
26°11.804'	-84°43.953'	551	06.03.2009	22:15:00



## Sediment surface

<b>Sediment</b>	Sandy coral rubble, in the upper part clay
<b>Colour</b>	Pale brown, 10YR6/3
<b>Structure</b>	
<b>Constituents</b>	Corals, polychaet with a tube consisting of shell fragments, pteropods,
<b>Living organisms</b>	
<b>Morphology</b>	Washed out

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
	Schönfeld
	Dullo
<b>Operator</b>	Schönfeld

# Reineck box core

M78/1-192-2

Latitude	Longitude	Depth [m]	Date	Time
26°11.804'	-84°43.953'	551	06.03.2009	22:15:00



Grain size fraction &gt; 2 mm



Grain size fraction &gt;500 µm



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Solitary coral 1

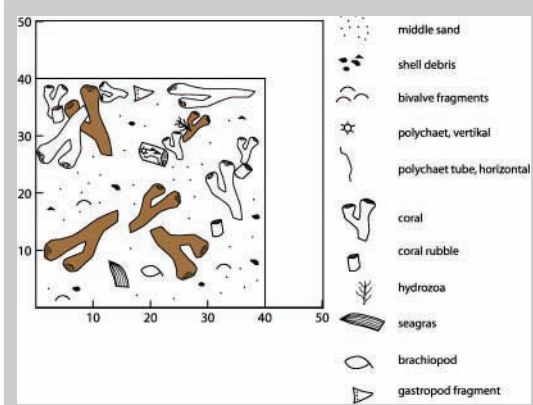
# Reineck box core

M78/1-193-2

Latitude	Longitude	Depth [m]	Date	Time
26°11.774'	-84°43.969'	548	07.03.2009	01:01:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Medium sand with coral ( <i>Lophelia</i> ) rubble; sand is well rounded, well sorted and consists of 1/3 foraminifers, 1/3 biotritus and 1/3 quartz
<b>Colour</b>	Light brownish grey, 10YR6/2
<b>Structure</b>	Coral ( <i>Lophelia</i> ) fragments irregularly distributed, no preferred orientation
<b>Constituents</b>	<i>Lophelia</i> fragments, 3 -10 cm in size, partly encrusted by hydrozoans and serpulids, brachiopods, gastropod fragments, seaweed

<b>Living organisms</b>	
<b>Morphology</b>	Washed out

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
	Dullo
<b>Operator</b>	Schönfeld

# Reineck box core

M78/1-193-2

Latitude	Longitude	Depth [m]	Date	Time
26°11.774'	-84°43.969'	548	07.03.2009	01:01:00



Grain size fraction &gt; 2 mm

Close-up of *Lophelia* corallite, which shows abnormal habitus, most likely due to the reaction of a bioeroding sponge

Grain size fraction &gt; 2 mm



Bulk sample of matrix sediment



Coral fragments, which C. Dullo and S. Flögel received for geochemical analysis

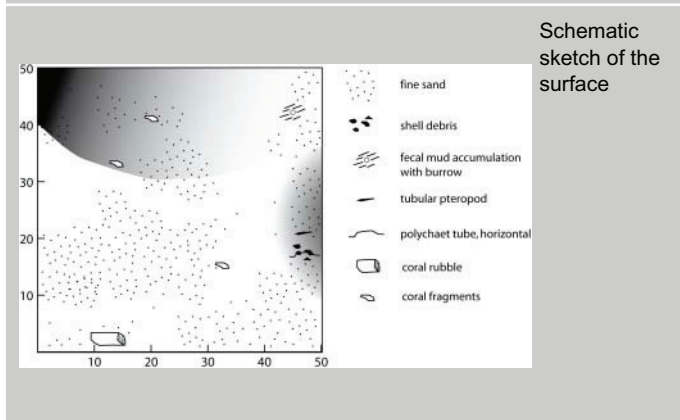
# Reineck box core

M78/1-195-1

Latitude	Longitude	Depth [m]	Date	Time
26°11.198'	-84°44.050'	569	07.03.2009	15:56:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Clay, covered by fine sand consisting of foraminifers and well-rounded siliciclastics (dominately quartz), slightly silty, corals ( <i>Lophelia</i> ) occur rarely randomly distributed.
<b>Colour</b>	Light yellowish brown, 2.5Y6/2
<b>Structure</b>	Ripples in clay covered by fine sand
<b>Constituents</b>	<i>Lophelia</i> clasts, pteropods, polychaets with shell nests, coral fragments
<b>Living organisms</b>	
<b>Morphology</b>	Irregular with ripples

## Sediment succession

<b>Sediment</b>	Clayey mud throughout
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Schönfeld
	Dullo
	Titschack
<b>Operator</b>	Schönfeld

# Reineck box core

M78/1-195-1

Latitude	Longitude	Depth [m]	Date	Time
26°11.198'	-84°44.050'	569	07.03.2009	15:56:00



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Grain size fraction &gt; 500 µm



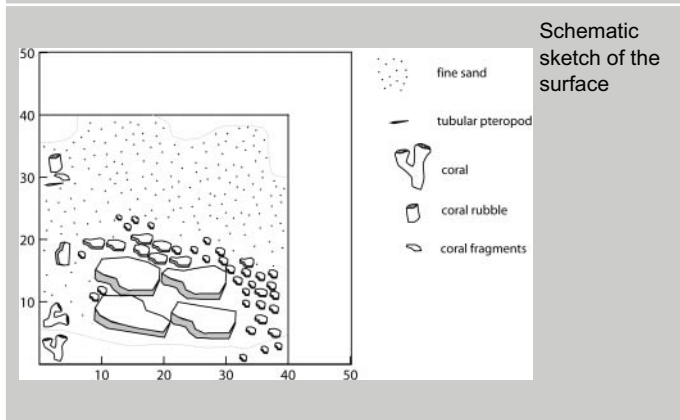
# Reineck box core

M78/1-196-1

Latitude	Longitude	Depth [m]	Date	Time
26°11.071'	-84°44.050'	580	07.03.2009	16:54:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Silty clay clasts (internally stratified) in fine sand matrix sediment; sediment partly Fe/Mn impregnated
<b>Colour</b>	Light greenish gray, 8/10Y
<b>Structure</b>	Clasts collapsed (not primary but from sampling)
<b>Constituents</b>	Corals ( <i>Lophelia</i> ), pteropods
<b>Living organisms</b>	
<b>Morphology</b>	Irregular

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
<b>Operator</b>	Schönfeld

# Reineck box core

M78/1-196-1

Latitude	Longitude	Depth [m]	Date	Time
26°11.071'	-84°44.050'	580	07.03.2009	16:54:00

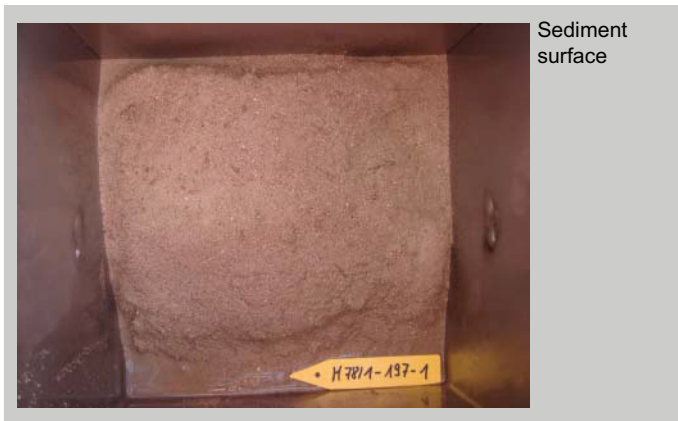


Coral fragments (> 2mm) of *Lophelia*

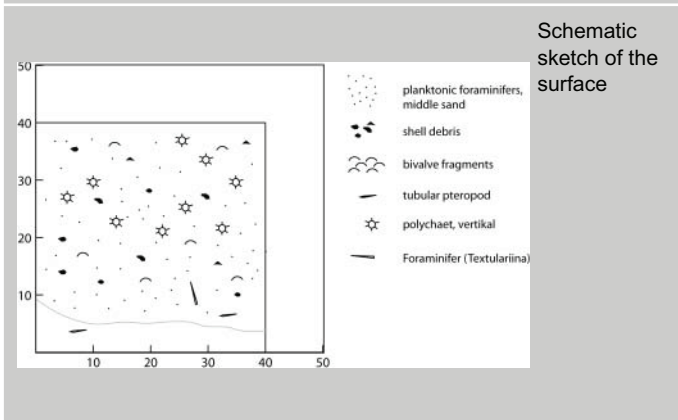
# Reineck box core

M78/1-197-1

Latitude	Longitude	Depth [m]	Date	Time
26°10.809'	-84°44.065'	598	07.03.2009	17:55:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Silty fine to middle sand
<b>Colour</b>	Light brownish gray, 10YR6/2
<b>Structure</b>	Ripple
<b>Constituents</b>	Pteropods, polychaets, shell debris, foraminifers ( <i>Jacuela obtusa</i> , etc.)
<b>Living organisms</b>	
<b>Morphology</b>	Ripple

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
	Schönfeld
<b>Operator</b>	Schönfeld

# Reineck box core

M78/1-197-1

Latitude	Longitude	Depth [m]	Date	Time
26°10.809'	-84°44.065'	598	07.03.2009	17:55:00



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Solitary coral 1



Grain size fraction &gt; 500 µm



Solitary coral 1

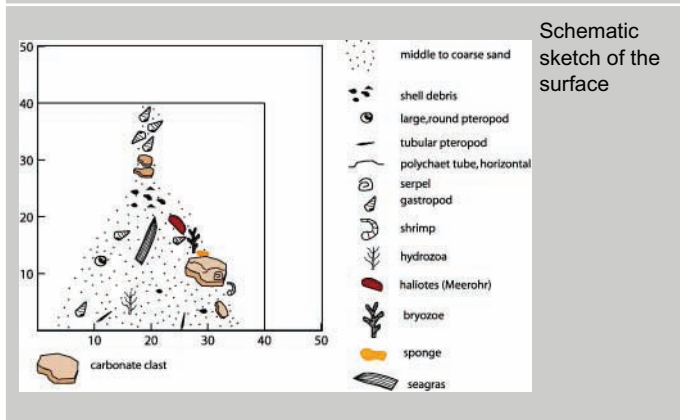
# Van Veen grab

M78/1-205-1

Latitude	Longitude	Depth [m]	Date	Time
24°28.549'	-81°02.030'	195	09.03.2009	20:40:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Homogeneous middle to coarse sand with carbonate clasts
<b>Colour</b>	Light yellow brownish, 2.5Y6/3
<b>Structure</b>	Carbonate clasts
<b>Constituents</b>	Decapod, large pteropods, overgrown carbonate crust, gastropods, hydrozoans, bryozoans, seaweed, <i>Haliotis</i>
<b>Living organisms</b>	
<b>Morphology</b>	Washed out

## Sediment succession

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
<b>Operator</b>	Schönfeld

# Van Veen grab

M78/1-205-1

Latitude	Longitude	Depth [m]	Date	Time
24°28.549'	-81°02.030'	195	09.03.2009	20:40:00



Hardground clasts

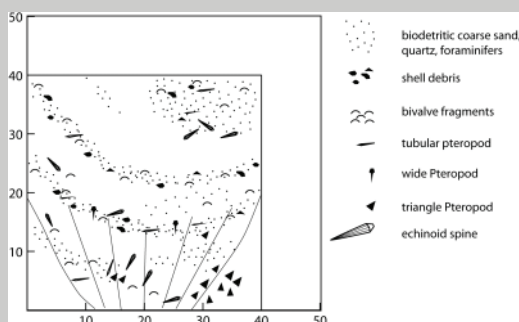
# Van Veen grab

M78/1-207-2

Latitude	Longitude	Depth [m]	Date	Time
24°22.197'	-80°57.386'	261.8	09.03.2009	23:32:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

<b>Sediment</b>	Biotrititic coarse sand consisting of quartz and foraminifers, bivalve fragments, echinoid spines
<b>Colour</b>	Light yellowish brown, 2.5Y6/4
<b>Structure</b>	On one side washed out
<b>Constituents</b>	Bivalves, pteropods, echinoid spines, foraminifers
<b>Living organisms</b>	
<b>Morphology</b>	Flat

## Sediment succession

<b>Sediment</b>	Homogeneous coarse sand with some burrows
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	Burrows enriched with pteropods
<b>Subsamples</b>	Titschack
	Schönfeld
<b>Operator</b>	Schönfeld

# Van Veen grab

M78/1-207-2

Latitude	Longitude	Depth [m]	Date	Time
24°22.197'	-80°57.386'	261.8	09.03.2009	23:32:00



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Grain size fraction &gt; 500 µm



# Van Veen grab

M78/1-208-1

Latitude	Longitude	Depth [m]	Date	Time
24°18.499'	-80°56.453'	311.4	10.03.2009	00:35:00



## *Sediment surface*

<b>Sediment</b>	Nearly no recovery, only a few fragments
<b>Colour</b>	
<b>Structure</b>	Washed out
<b>Constituents</b>	Pteropod fragments, gastropod, brachiopod fragment, coral
<b>Living organisms</b>	
<b>Morphology</b>	

## *Sediment succession*

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
<b>Operator</b>	Schönfeld

# Van Veen grab

M78/1-208-1

Latitude	Longitude	Depth [m]	Date	Time
24°18.499'	-80°56.453'	311.4	10.03.2009	00:35:00



Bulk sample



Close-up of bulk sample, pteropod fragments, gastropod, brachiopod fragment, coral fragments

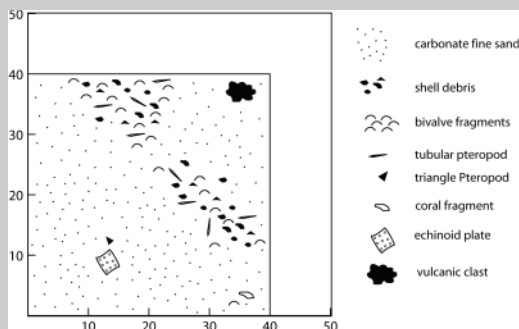
# Van Veen grab

M78/1-213-1

Latitude	Longitude	Depth [m]	Date	Time
24°14.626'	-80°55.005'	536.8	11.03.2009	09:15:00



Sediment surface



Schematic sketch of the surface



Close-up of sediment surface with volcanic clast

## Sediment surface

<b>Sediment</b>	Carbonatic fine sand with patches of carbonatic coarse sand. Volcanic clast
<b>Colour</b>	Light yellowish brown, 10YR6/4
<b>Structure</b>	Flat
<b>Constituents</b>	Pteropods, echinoid fragments, shell with pteropods, otoliths, bivalves, echinoid spines, heavily bioeroded coral (possibly <i>Lophelia</i> )
<b>Living organisms</b>	
<b>Morphology</b>	Slightly waved

## Sediment succession

<b>Sediment</b>	Homogeneous middle sand throughout
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
	Schönfeld
<b>Operator</b>	Titschack, Joseph

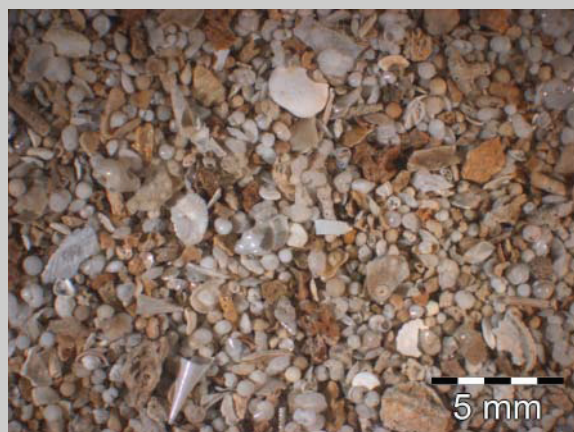
# Van Veen grab

M78/1-213-1

Latitude	Longitude	Depth [m]	Date	Time
24°14.626'	-80°55.005'	536.8	11.03.2009	09:15:00



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Volcanic lithoclast



Grain size fraction &gt; 500 µm



Coral 1

# Van Veen grab

M78/1-214-1

Latitude	Longitude	Depth [m]	Date	Time
24°14.416'	-80°55.253'	545	11.03.2009	10:46:00



Sediment surface



Schematic sketch of the surface

## Sediment surface

**Sediment** Coral rubble with fine sand and gravel

**Colour** Light yellowish brown, 10YR6/4

**Structure**

**Constituents** Corals, pteropods, shell debris

**Living organisms**

**Morphology** Washed out

## Sediment succession

**Sediment**

**Colour**

**Structure**

**Constituents**

**Bioturbation**

**Subsamples** Titschack

**Operator** Titschack, Joseph

# Van Veen grab

M78/1-214-1

Latitude	Longitude	Depth [m]	Date	Time
24°14.416'	-80°55.253'	545	11.03.2009	10:46:00



Grain size fraction &gt; 2 mm



Grain size fraction &gt; 1 mm



Grain size fraction &gt; 500 µm

# Van Veen grab

M78/1-215-2

Latitude	Longitude	Depth [m]	Date	Time
24°15.508'	-80°53.497'	470	11.03.2009	12:46:00



## *Sediment surface*

<b>Sediment</b>	Nearly no recovery, only a few fragments
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	Coral fragments, echinoid spines, pteropods, gastropods, foraminifers
<b>Living organisms</b>	
<b>Morphology</b>	

## *Sediment succession*

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Joseph
<b>Operator</b>	Titschack, Joseph

# Van Veen grab

M78/1-215-2

Latitude	Longitude	Depth [m]	Date	Time
24°15.508'	-80°53.497'	470	11.03.2009	12:46:00



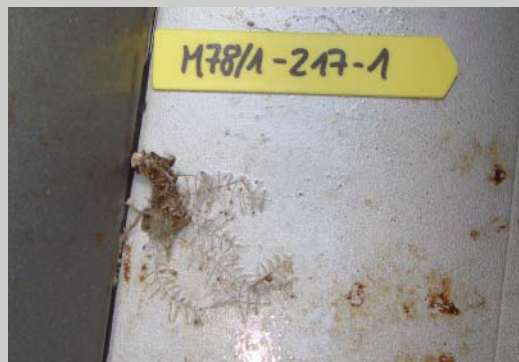
Bulk sample



# Van Veen grab

M78/1-217-1

Latitude	Longitude	Depth [m]	Date	Time
24°15.011'	-80°54.'585	461	11.03.2009	15:40:00



Grab washed out, only a few fragments and organisms

## ***Sediment surface***

<b>Sediment</b>	One coral fragment and a clast encrusted by a sponge, hydrozoan and octocoral
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	Coral, hydrozoan, sponge, octocoral
<b>Living organisms</b>	
<b>Morphology</b>	Washed out

## ***Sediment succession***

<b>Sediment</b>	
<b>Colour</b>	
<b>Structure</b>	
<b>Constituents</b>	
<b>Bioturbation</b>	
<b>Subsamples</b>	Titschack
<b>Operator</b>	Titschack, Joseph

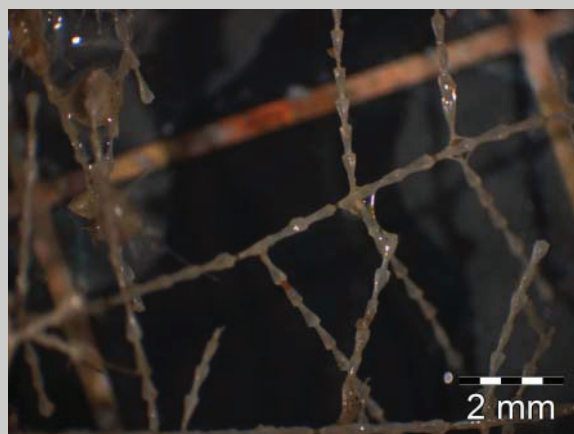
# Van Veen grab

M78/1-217-1

Latitude	Longitude	Depth [m]	Date	Time
24°15.011'	-80°54.'585	461	11.03.2009	15:40:00



Coral fragment



Hydrozoan



Coral fragment



Hydrozoan



Octocoral



Octocoral

# Box core

M78/1-222-8

Latitude	Longitude	Depth [m]	Date	Time
12°1.483'	-64°28.503'	1019.4	19.03.2009	12:04:00



Sediment surface

## Sediment surface

**Sediment** Slightly fine sandy clay

**Colour** Olive, 5Y4/3; partly olive gray (5Y4/2)

**Structure**

**Constituents** Scaphopods, pteropods, polychaets, tube-shaped textulariids, tree-shaped textulariids, *Rhabdammina*, Gromiidea

**Living organisms**

**Morphology** Flat to slightly irregular

## Sediment succession

**Sediment** 0-2 cm: slightly fine sandy clay  
2- 43 cm: slightly fine sandy clay

**Colour** 0-2 cm: olive, 5Y4/3  
2- 43 cm: olive gray, 5Y4/2

**Structure**

**Constituents**

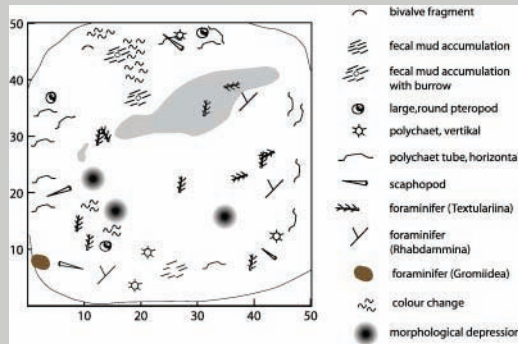
**Bioturbation** Bioturbated with burrows, 1 - 2 cm in diameter

**Subsamples** Titschack

Richey

Schönfeld

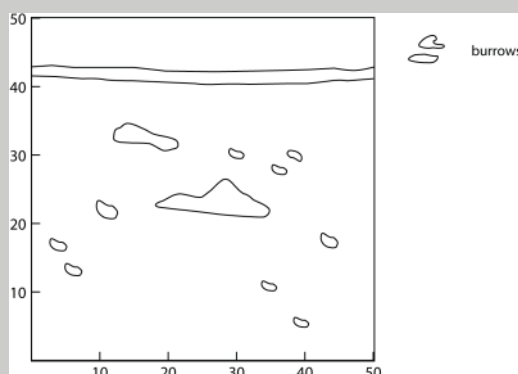
**Operator** Titschack, Richey



Schematic sketch of the surface



Sediment section



Schematic sketch of the section

## Box core

M78/1-222-8

Latitude	Longitude	Depth [m]	Date	Time
12°1.483'	-64°28.503'	1019.4	19.03.2009	12:04:00



Grain size fraction &gt; 2 mm



Close-up of grain size fraction &gt; 500 µm



Grain size fraction &gt; 1 mm



Burrow



Grain size fraction &gt; 500 µm